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An Inside Look at Clinton's Plans for Technology Policy

The invigoration of industrial technology ranks high in the priorities of the Clinton Administration. The impresario for a major part of that effort is a veteran of industry, academe, and the Washington advisory circuit, Mary L. Good, Under Secretary for Technology and head of the Technology Administration in the Department of Commerce. Trained as a chemist, Good spent 25 years in teaching and research in the Louisiana State University system before joining AlliedSignal in 1986, where she was Senior Vice President-Technology when President Clinton appointed her to the Commerce post, for which she was confirmed in August. A member of the National Academy of Engineering, Good served as Chairman of the National Science Board from 1988-91 and as a member of President Bush's Council of Advisors on Science and Technology from 1991-93. She spoke with SGR Editor Greenberg on October 28. Following is the text, transcribed and edited by SGR.

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SGR. *There's a lot of debate about the appropriate role of government in civilian technology. What's this Administration's position on that?*

Good. There's an ongoing discussion on the role that the government ought to play, and there's room for legitimate debate.

SGR. *You're one of the chiefs of the government role in civilian technology.*

A Bush-Era Memoir Fingers the White House "Official Bore"—P. 6

Good. There are some things that we're pretty clear on that we should do. There is no question that the percentage of R&D on the defense side is not appropriate anymore. The President wants to move it to at least 50-50 by 1997 or '98. Most people don't quarrel about that. They just quarrel about what it is that you're going to do with the additional resources on the civilian side.

SGR. *What are you going to do?*

Good. We have a lot of good federal facilities and resources and talent. The aim is to clearly orient that group to provide at least the infrastructure that allows civilian technology to move more rapidly. We don't want to get into the business of picking and choosing technologies that are going to win. I don't disagree with people who are opposed to that.

(Continued on Page 3)

Warm Welcome and Queries For New Director of NIH

Harold Varmus glided through a short, adulatory confirmation hearing on November 3 on his way to becoming Director of the National Institutes of Health. But even as the Senators praised the Nobel laureate, they and the nominee echoed widespread concerns about the condition and future of the great institution.

NIH still hasn't fully recovered from the strong-willed regime of former Director Bernadine Healy, whose main creation there, the record-breaking Women's Health Initiative, has just been criticized as a poor job by the Institute of Medicine [See In Print, P. 8]. The Clinton Administration, tighthanded with money for NIH, has not spelled out the place of biomedical research in its plans for a cosmic reorganization of American health care. NIH's own inhouse

(Continued on Page 2)

In Brief

Coming soon from the White House, an Executive Order establishing the National Science and Technology Council, an agglomeration embracing the functions of the National Space Council, the National Council on Critical Materials, and the Federal Coordinating Council for Science, Engineering, and Technology. Staffed by the Office of Science and Technology Policy, which remains unchanged, the new setup is intended to work closely with the Office of Management and Budget in setting research priorities and shaping R&D programs.

Also in the works: formation of a Presidential science advisory committee, with a different format from the Bush version, which was a monthly bull session that occasionally produced reports, none of any consequence. Presidential Science Advisor John Gibbons is said to want something less vaporous and more directly focused on the agenda of his office. The changes are expected to be announced after Congress votes on NAFTA.

Disconnected from Reality? In a report titled *National Excellence: A Case for Developing America's Talent*, US Secretary of Education Richard Riley states: "The US shortage of graduate students in mathematics and science forces many large companies—such as Texas Instruments, Bell Laboratories, and IBM—to fill jobs, particularly in research, with people educated outside the United States."

NASA has moved into Phase II of its program to develop a supersonic transport, aiming for a design "economically practical as well as environmentally safe."

. . . Senator Mikulski Wants Statement of NIH Goals

(Continued from Page 1)

research program is under envious fire from grant-hungry clients in academe. And basic research in general is feeling unloved in Bill Clinton's Washington.

The hearing took place before the Labor and Human Resources Committee, chaired by Senator Edward Kennedy, and was followed a few days later by the Committee's unanimous vote of approval for Varmus, Professor of Microbiology, Biochemistry and Biophysics at UC San Francisco. Approval by the full Senate is a certainty, but because of a clogged agenda, still hadn't happened as of November 11.

In a short prepared statement, Varmus stressed support for basic research, recalling that "With NIH funding, I have worked unimpeded by anything other than my own limitations," adding: "I have been especially concerned about the need to explain why fundamental research in biology and chemistry is essential to progress against cancer, AIDS, and other diseases—and why it is essential to the success of our biotechnology and pharmaceutical industries." And he said, "As an investigator who has seen the pursuit of an obscure chicken virus create a new vision of human cancer, I will defend open-ended basic science against the calls for restricted applications of what is already known."

Senator Barbara Mikulski (D-Md.) was quick off the mark with her own view of NIH. "I'm concerned that NIH might be adrift," she boomed, describing herself as the "Senator of and for NIH," headquartered in her state. Mikulski didn't spell out her concerns, but employing the tactic of getting appointees on the record for future confrontations, told Varmus that she wants him to state his goals for NIH—for six months, one year, and three years.

Confining his answer to six-month goals, Varmus said he aimed to hurry the recruitment of directors for the Congressionally mandated new AIDS office at NIH, as well as for the National Institute of Neurological Disorders and Stroke, the National Institute on Drug Abuse, and the Clinical Center. He noted a Congressional directive to report on the condition of the NIH intramural program. He also said he would address problems of employment opportunity at NIH, a topic that has generated nasty accusations and ongoing investigations. And he referred to correcting "encumbrances in the peer-review process."

Asked about his intentions for the extra-mural program, Varmus said he would have a member of his staff confer with researchers around the country "to get ideas." Mikulski announced that she would shortly visit Varmus in Bethesda for a fuller discussion.

By virtue of her seniority and committee assignments, Mikulski possesses only middling power in Congressional biomedical politics. But now 57, she could go a long way in the Senate. In her capacity as Chair of the Appropriations Subcommittee for the National Science Foundation, Mikulski recently rattled science's old guard in Washington by sternly ordering NSF to team up with industry and do something useful for the economy [SGR, November 1].

Senator Nancy Kassebaum (R-Kansas) noted that NIH is a confederation of separately budgeted institutes and wondered about the Director's power to run the place. Varmus said that NIH "needs more trans-institute activities," and he expressed confidence that he could organize them from the Director's office. Kassebaum told him she was glad he had spoken in support of basic research.

Senator Dan Coats (R-Indiana) observed that Congress frequently uses the power of the purse to dictate programs for NIH, often in response to "personal concerns," i.e., sick people who appeal to members.

Varmus replied, "My concern is to protect the basic research enterprise" while also conducting clinical research. Noting that Varmus received a master's degree in literature from Harvard before he studied medicine, Coats asked, "How does an individual with love for Renaissance literature and love for the laboratory administer a major national institution filled with political intrigue and inundated with suggestions from Senators and Congressmen?"

Varmus acknowledged that he lacked experience running a big organization, but said he was familiar with the issues and had been "in the thick of many battles" as a member of advisory committees at the National Academy of Sciences. As the hearing drew to a close, Senator Kennedy returned to the senior vacancies at NIH and, expressing concerns about the adequacy of the pay scales, asked Varmus to send along his recommendations.

Reflecting the perishability of power, influence, and heavily hyped reports in Washington, no reference was made during the one hour and 10 minute hearing to another centerpiece of the previous administration at NIH: the report titled *Investment for Humanity: A Strategic Vision for the National Institutes of Health*, produced at Healy's command during 18 months of bureaucratic agony and rewrites, at incalculable cost in high-priced scientific and administrative time. Referred to while in preparation as "The NIH Strategic Plan," the first and only printing of the final version consisted of 2000 copies marked "For Administrative Use"—and then there were none.—DSG

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. . .Seeking New Missions for National Laboratories

(Continued from Page 1)

On the other hand, it's clear that there are certain areas of technology that are critical to what it is you're going to do in civilian technology over the next 10 or 15 or 20 years. And whatever we can do to move some of those resources to helping in those areas, I think we should.

The difference is that we should also do it in partnership with the industry, because technology moves so fast today, products move fast. If we don't have a partnership relationship, the whole technology-transfer issue is much too slow.

SGR. *We've got a collection of federal laboratories that's now costing around $23 billion a year. Isn't this a case of a solution searching around for a problem? Why not close down pieces of it and release the money into the economy?*

Good. First of all, you won't save the whole $23 billion. But there are several issues here. One is that part of that $23 billion still has a mission. So, you've got a piece of it that you need to maintain for the mission. Nobody believes that simply because we're downsizing the military, that you're going to shut down military R&D. That doesn't make any sense at all in today's world. The issue is you've got a major investment in infrastructure, facilities, and capabilities. So, rather than shut it down totally, it seems to me we ought to be able to be clever enough to use it effectively.

SGR. *This is not a new issue. Your earliest predecessor here, going back 33 years to the Kennedy Administration, Herb Holloman, came here with plans for a civilian technology program and related schemes similar to what's being advocated today. He got no place.*

Good. Right. But I really do think there is a window of opportunity. Windows of opportunity normally occur when you get discontinuities. With the Cold War demise, you have a discontinuity. And 33 years ago, you just didn't have that. Not only that, but the civilian industry in the United States at that time was so superior to anything else in the world that nobody worried about it. All of those things have changed. You've got the discontinuity of the Cold War shutdown. You've got a real understanding within the last 10 years that, number one, we are not the only folks who invent technology. And we're clearly not the only folks who can manufacture and sell it effectively. So, you've got an opportunity today and an understanding about what technology does for the economy that's very different than was true in his times.

SGR. *Questions are often raised about the "culture" of the government labs, whether they are adaptable to the commercial marketplace. What do we know about that?*

Good. We know something, but we don't know as much as we ought to. The issue is how to "incentivize," because people will respond to whatever the reward system is. If the reward system is to publish papers in scholarly journals, and you get promoted and paid more for having done that, that's what good scientists will do. But it can change if the system begins to reward you for creating a new technology which some company licenses and goes out and makes money with. Then, you either get a piece of that money or you get promoted and you get paid more for having done that chore. The cultures can be changed.

SGR. *You hear some people at NIH saying the culture of NIH is being perverted by commercial incentives, that the commercial incentives are introducing factors that are unwholesome for the practice of science and technology. Is that something to be concerned about?*

Good. I don't buy that comment at all. You've got to separate those two things. You cannot talk about the incentives for science and the incentives for technology in the same sentence, because they are different. The way you go about approaching that discussion is by deciding what your goals are. If your goal is to produce new knowledge and new science, then you set a certain set of rewards and expectations. If your goal is to be sure that you're creating new technology, then you've got a different set of goals and rewards.

It is true that you do have some problems when you try to mix those two things up. I think that's the issue, and one of the things we've to get over in this country is that one or the other is inherently "better" than the other. They are both legitimate occupations and they're both valuable. Because, if we don't get the technology out there in the street and get it commercialized, we'll not raise enough tax money to pay for those folks who do fundamental science. On the other hand, if you don't keep a reasonable percentage of people doing fundamental science and creating the knowledge base out of which we dip to do technology, you won't succeed either.

SGR. *In terms of priorities, one gets the sense that the star of science has fallen in this Administration and technology is high up there.*

Good. What I hope we're seeing is some balance. The fact that all of a sudden technology is important does not mean that science is less important. Technology is coming to the forefront because of economic issues. But that doesn't mean that science becomes less important. It means that it may have to share the stage a bit with technology. But there's no push to minimize science.

SGR. *The science budgets for the last several years have been essentially static. The fastest growing agency, though it's still relatively small, is NIST [National Institute of Standards and Technology]. Extraordinary growth, in percentage terms [from $69 million in fiscal 1993 to $200 million in fiscal 1994].*

Good. It's still a whole lot less than one percent of the government's budget.

SGR. *The President has often spoken of technology, but hasn't said much about science. You get the feeling that science is being eclipsed. Where's the money and where's the command attention?*

Good. It hasn't gotten cut. Other folks are getting cut today. Nobody has cut the budget in science. Okay? But, I

(Continued on Page 4)

. . . "Give Us a Couple of Years" to Assess Programs

(Continued from Page 3)

don't think you eclipse something which we've done well and are still doing simply by focusing on something we have not been doing and have not been doing well. And somehow we need for people not to get caught up in that rhetoric.

SGR. *In government technology policy, are the guiding principles still "precompetitive" and "generic," or have we gone beyond that?*

Good. We've gone to precompetitiveness. I don't know what the term "generic technology" means. Having worked in industry for a long time, and trying to figure out what you mean by generic technology—I have lots of problems with that.

SGR. *Do we put government money into better toasters made by a particular company?*

Good. No.

SGR. *Never?*

Good. I don't think so. But we clearly could put money into heating devices that would give you the same temperature at half the energy. And if I could do that, I assure you that a whole bunch of toaster makers would decide that they could use that technology.

SGR. *So, it's still precompetitive? And it's not tied to the advantage of any particular company?*

Good. No, I think that's not necessarily true at all, in the following sense. The whole issue here is that the government ought not to decide what a company ought to produce. On the other hand, with programs like the ATP [Advanced Technology Program, partially financed by NIST], we hope it provides help for the companies who get those programs. Because what they're doing is putting together a precompetitive program, which, if it is successful, they are going to commercialize fairly rapidly.

Remember, in those programs, there's two sets of criteria. The first one is the technical criteria, and you read that first, and if you don't judge that as very good, then you don't do the second. But if you judge the technology as very good, then you go to the second criteria, which is their business plan. And when you ask people for business plans, you are clearly hoping they're going to commercialize that and gain value from it. That's also why, in the ATP, the intellectual property rests with the companies that participate. But also remember, we've exacted a price for that. Those are not fully funded by the government. The industry has to put up 50 percent of its own money.

SGR. *ATP has now been in operation for several years. Is anybody making money from these projects?*

Good. Yes. The longest ones are now coming up on the third year. What we're in the process of doing is beginning to put together some metrics. And, in fact, NIST had some metric early on. But what we want to do is to try to understand what the metrics are before you start the programs. How you are going to measure success, not afterwards, but up front? The measurement of success is going to be partially how many of those companies brought commercial products to the market. How many of those products after five years are still in the market, particularly from some of the smaller companies. You really are interested in products and economic impact.

SGR. *Has any ATP project hit a home run?*

Good. To be honest with you, I have not reviewed the detailed projects of ATP well enough to answer that question.

SGR. *You'd hear about it first, wouldn't you?*

Good. Several of them have had big successes in the sense that they have products on the market and are moving small companies to success. Give us another couple of years and we'll be able to answer that question. I think there will be a few home runs. I would be highly encouraged if we get a lot of singles and doubles.

SGR. *What sort of financial scale do you foresee for ATP? It's up to $200 million a year now.*

Good. The President would like to see the program at about $750 million a year on a continuing basis after about 1997-98. That's a sizeable sum of money, but in comparison to what the federal government spends in R&D, that is still a very small number.

SGR. *What are you doing about the automobile? There's been a lot of confusion since the President announced the joint industry-government research goals of tripled fuel efficiency and so forth.*

Good. The agreement is to look at three segments of the problem, and I think that's one of the things that hasn't been very well explained yet. First, to look at advanced manufacturing. In other words, to bring or make available all of the inhouse knowledge and so forth that the government has in advanced manufacturing; we have quite a lot, coming out of the defense industry and elsewhere. For the car companies to be competitive over time, flexible manufacturing, just-in-time deliveries, being able to turn a model, are going to be very important. We expect the car companies to pay for that. There will be some input from the government labs.

The second piece of it is this 10-year time frame that we're trying to get them to think about. Within that time frame, they will work diligently to continue to improve fuel economy and pollution performance with the internal combustion engine. Here, the government laboratories and some of the technology we have can really begin to have an impact, because we still haven't been able to get lightweight materials into automobiles at the cost that you need. We now understand processing of composites and things like that a great deal better than we did before. The issue is can we move that improvement much more rapidly than would happen without? In that portion we also expect the car companies to foot the biggest piece of that bill.

The third piece is what everybody has focused on, which is the leapfrog technology. In other words, what will the next generation private transportation vehicle look like, beyond

(Continued on Page 5)

. . . Auto R&D Program Aiming for Breakthroughs

(Continued from Page 4)

the internal combustion engine? You really do back up against limits in the internal combustion engine. You back up against the thermodynamic limits, and there you are. The government has the possibility of really making an impact and moving that much more rapidly than the car companies might themselves, since the incentive to move to a really radical technology is tough to contemplate. But it's different if you know you've got a goal out there and you've got all kinds of options.

The issue is to try to push that technology more rapidly. If you want a breakthrough technology, you're more likely to get it if you have people from different backgrounds working on it.

SGR. *General Motors and Ford, not so much Chrysler, have some of the largest R&D budgets in the world, bigger than the R&D of many substantial countries. Why does the government have to get into the picture? Why not have these two affluent organizations work on this in a competitive way?*

Good. Remember, the competition for selling vehicles is still going to be there. You're not going to mess that up. The reason is really two fold. It's a legitimate thing for the government to do because it is a major social issue. There's the problem of pollution from the automobile as we get more cars and more people. And there's fuel economy and its relation to imports and the balance of trade. These are issues that concern the public, but they may or may not be where a car company would go in considering what the customer would like to buy. So, there really are some public goals in this particular one.

SGR. *Why not mandate very stringent fuel-consumption standards, which we have backed away from in this country?*

Good. You still would like to have a viable technical solution. If you just mandate the fuel consumption, then you're sitting on a situation where if you don't get that technology, then you're going to have a funny-looking automobile. So, you have a much better chance of getting there if you do some collaborative research, and particularly if you use part of this R&D expenditure we're doing already and have it focus on some goals and objectives like that.

SGR. *Where does the academic sector fit into the technology plans of the Administration?*

Good. My own view, and I think if you talk to the people at OSTP [White House Office of Science and Technology Policy], is that the academic sector is still one of the linchpins to make all of this work. Because we still can do none of it without high-quality people. That's where they come from. Many of the seminal ideas come from there. But you'd like the universities to understand what is required to be technologically successful. It does not mean that we should not do basic research. It doesn't mean that we shouldn't continue the kinds of things we're doing. But if they could also give their students a view of why it's so important to be technologically successful, and how to do that, I think we'd end up with kids who are better trained.

The science training they get today is just excellent. But some of them still view doing "technology" as an inferior to doing "science." We need people to understand that both of these are necessary.

SGR. *Senator Mikulski (D-Md.) has recommended a strong industrial thrust for the National Science Foundation [SGR, November 1]. As a former head of NSF's Board, what do you think of that?*

Good. I'm not really sure yet. I've got to understand where they're coming from somewhat better than I do at the moment. But I think what they're trying to say is they would like the universities to have more relevance in today's world. I don't believe that means necessarily doing technology *per se*. I think good science is still a good thing to do. On the other hand, I think there are some things in engineering that we don't talk as much about as we should.

For example, I think the Engineering Research Centers [supported by NSF, in collaboration with universities and industry] speak very well to Senator Mikulski's concerns. That group has been very successful. They have very good industry interactions. The students that they train work with the industry, particularly in engineering, and are really quite well trained.

One thing that might actually happen is that as industry moves to be more competitive and focuses more on technology and has less time to do what they used to call directed basic research, it may be that the universities will become much more important to fill that gap.

SGR. *Can American-based companies with foreign ownership take part in the Administration's industrial technology programs?*

Good. That's always a difficult question. We're trying to decide how those companies should be viewed with regard to the programs that I mentioned earlier—partnering with government research laboratories and things like that. Eventually, we're going to have to work out a set of principles that says that the taxpayers' money should be spent in ways that enhance the American infrastructure. We need to work out what those principles are and then deal with that question.

SGR. *Can a foreign company participate in an ATP consortium?*

Good. The language is such that you must prove that getting the grant will substantially enhance the United States' manufacturing capacity or whatever. It is possible for foreign-owned companies to ask to be a part of that program, and then to have the Secretary of Commerce decide whether they meet those requirements or not.

SGR. *Then these are essentially American consortia, but there's an opportunity for foreign companies to participate in special circumstances.*

Good. That's correct, but it would have to be special circumstances. And they would have to prove that they will add substantially to the American base.

"Official Bore" in Bush White House: Guess Who?

The mandarins of national science policy rarely figure in White House staff memoirs, except for those written by themselves.

But D. Allan Bromley, Presidential Assistant for Science and Technology throughout most of the Bush Administration, has made the grade in one of the first booklength insider accounts of that presidency, *Hell of a Ride: Backstage at the White House Follies 1989-1993* (Simon & Schuster, 249 pp., $21), a flippant, scornful work by John Podhoretz, who became a speechwriter for Bush at age 28.

Discussing the changeover from the martinet White House Chief of Staff John Sununu to the easy-going Sam Skinner in December 1991, Podhoretz reports that at Skinner's daily staff meetings, "people who had been silent in the Sununu years would start talking and never stop. Minor White House aides were dominating the meeting while the genuinely powerful ones [like Budget Director Richard Darman] would sit in silence."

Podhoretz continues: "Science adviser D. Allan Bromley, universally considered the Official White House Bore, would talk for five minutes about how the General Services Administration was determined to move the National Science Foundation to a new building in northern Virginia and how this was a disaster for the president as the scientific community would take the move out of D.C. as evidence that the administration was not serious about science."

That's Podhoretz's only mention of Bromley or NSF, which was indeed at that time resisting a move, currently in progress, from downtown Washington to suburban Virginia. Podhoretz, an avowed Reagan devotee, describes his defeated boss as "George Bush, empty man," and heaps opprobrium on many members of his Administration.

SGR hears that Bromley, who returned to Yale, where he's a Professor of Physics, is working on his own memoirs of service in the Bush White House.

Job Changes & Appointments

Ruth L. Kirschstein, Acting Director of the National Institutes of Health since Bernadine Healy departed in June, has been designated for the number 2 job, Deputy Director of NIH, by Harold Varmus, who is due any day to receive Senate confirmation as Director. With much praise for Kirschstein, who was present, Varmus announced the appointment during his confirmation hearing on November 3.

While serving as Acting Director, Kirschstein has also retained her longstanding post of Director of the National Institute of General Medical Sciences.

Jordan J. Cohen, Dean of the School of Medicine at the State University of New York at Stony Brook, has been named President of the Association of American Medical Colleges, succeeding ***Robert Petersdorf***, who will retire next spring. The Association, headquartered in Washington, comprises 126 American and 16 Canadian mainstream medical schools, and hundreds of hospitals and professional associations. The AAMC presidency is one of the top-paying jobs on the non-profit circuit. SGR's last annual salary survey [published May 15] reported $310,000 plus $31,000 in benefits for Petersdorf.

By unanimous vote, the Senate Energy and Natural Resources Committee has approved the nomination of ***Martha Krebs*** to head the Office of Energy Research at the Department of Energy.

John M. Stewart, former Staff Director of the Senate Subcommittee on Science, Technology, and Space, and most recently TVA Vice President for Economic and Community Development, has been appointed Director of the Consortium of Research Institutions, Knoxville, Tenn. The Consortium consists of the Oak Ridge National Laboratory, the University of Tennessee, TVA, and the Department of Energy's Oak Ridge Operations Office.

Bruce L. Umminger, Director of the Division of Integrative Biology and Neuroscience at the National Science Foundation, began a one-year assignment in October at the Smithsonian Institution, where he will work with Smithsonian Assistant Secretary Thomas Lovejoy on biodiversity issues. Lovejoy served as advisor to Interior Department Secretary Bruce Babbitt for planning the National Biological Survey recently established by the Department. A Smithsonian announcement notes that a proposed "clearing-house operation," the National Center for Biological Diversity, "might be housed at the Smithsonian."

Popovic Decision: No Proof

From the decision of the Departmental Appeals Board, Department of Health and Human Services, in the case of Mikulas Popovic, against whom the HHS Office of Research Integrity returned a series of findings of misconduct that allegedly occurred while Popovic was conducting AIDS research at NIH in the laboratory of Robert Gallo. (Following the Board's decision, ORI requested a delay to Nov. 15 in Gallo's appeal of misconduct finding.)

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... this case has compelled us to parse a record reflecting years of investigations ... all focused essentially on the meaning which we should give a handful of words and notations contained in one heavily-edited paper written by a scientist with limited English skills during a volatile period of scientific discovery a decade ago.... One might anticipate that from all this evidence, after all the sound and fury, there would be at least a residue of palpable wrongdoing. That is not the case. On reviewing this lengthy record ... we find that ORI was simply unable to prove ... that Dr. Popovic is guilty of scientific misconduct....

More IN PRINT: Chemistry, Health Statistics, Etc.

(Continued from Page 8)

the cost estimates. However, while charging NIH with inadequate peer review, unrealistic cost estimates, and flaky hypotheses for the trials, the IOM report says it's too late to stop now. Major modifications, it hopefully concludes, could produce valuable data. Susan Thaul, of the IOM, served as Study Director for the report.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242; in the Washington, DC, area: 202/334-3313.

Breast Cancer: A National Strategy (30 pp., no charge), report of the President's Cancer Panel Special Commission on Breast Cancer, recommending, among other expanded efforts, an increase in federal support of research from last year's $196 million at the National Cancer Institute to "no less than $500 million per year." (Last year, Congress also grabbed $210 million from the Defense Department and allocated it for breast cancer research, but that unexpected peace dividend enraged the Pentagon and is unlikely to be repeated.) The Commission on Breast Cancer held a dozen meetings around the country between May 1992 and July 1993 and took testimony from researchers, physicians, and patients.

Order from: National Cancer Institute, Public Inquiries Office, Building 31, Room 10-A31, Bethesda, Md. 20892; tel. 301/495-5583; fax 301/402-2594.

Nuclear Nonproliferation and Safety: Challenges Facing the International Atomic Energy Agency (GAO/NSIAD/RCED-93-284; 76 pp., no charge), from the General Accounting Office (GAO), an inventory of weaknesses in the ability of the International Atomic Energy Agency (IAEA) to monitor clandestine nuclear mischief. The GAO describes IAEA safeguards "as a central element in international efforts to prevent the proliferation of nuclear weapons." But the report notes that IAEA lacks unrestricted authority to conduct inspections of suspicious circumstances and that its budget has failed to keep pace with the increase in nations under its purview.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/512-6000; fax 301/258-4066.

Critical Technologies: The Role of Chemistry and Chemical Engineering (70 pp., no charge), in slick format, written pop style, from the Board on Chemical Sciences and Technology at the National Academy of Sciences, a review of chemistry's place in technologies that were deemed "critical" in a since-forgotten report issued in 1991 by the National Critical Technologies Panel, an offshoot of the Bush White House science office. Fearful that the list of hot technologies might be used to agitate for more federal spending, Bush and company ordered Science Advisor D. Allan Bromley to remove his office's name from the 1991 document. Nonetheless, the chemists at the Academy saw an opportunity, as they state in their report, "to examine the impact of research in chemistry and chemical engineering, thus highlighting the significance of these fields to our society." To which they discreetly add: "Although the discussion of research funding priorities was not an explicit objective, it is hoped that the report will indirectly benefit the funding of chemical and chemical engineering research."

Order from: National Academy of Sciences, Board on Chemical Sciences and Technology, Room 273, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-2156; fax 202/334-2154.

Health United States: 1992 and Healthy People 2000 Review: 1992 (GPO Stock No. 017-022-0218-9; 390 pp., $30) from the National Center for Health Statistics, the annual, comprehensive collection of basic numbers on the American health-care system—vital statistics, expenditures and price changes, employment, hospital usage, insurance coverage, etc.—presented in 145 tables. Included in the same binding is a work previously published separately, *Healthy People*, which reports on the health-promotion goals of the Department of Health and Human Services—e.g., reduction of infant mortality, accident prevention, smoking cessation, etc.

The data tables are also available for $15 on disks for IBM compatibles: 3 1/2" (GPO Stock No. 017-022-01214-6); 5 1/4" (GPO Stock No. 017-022-01215-4).

Order from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325; tel. 202/783-3238; fax 202/512-2250. Add 25 percent for foreign orders.

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IN PRINT: Electronic Delivery, Privacy, Biopolymers

The publications listed are obtainable as indicated—not from SGR.

Making Government Work: Electronic Delivery of Federal Services (GPO Stock No. 052-003-01346-1; 178 pp., $11), from the Congressional Office of Technology Assessment (OTA), says the federal government is stumbling around in efforts to provide public services and information electronically. The report focuses on the big federal programs—food stamps, social security benefits, small business loans, etc.—but makes a passing reference to the electronic potential for "15,000 scientists who receive National Science Foundation research grants each year" [NSF is working on electronic grants filing, review, and management, as is NIH, though the latter goes unmentioned]. The report says the government "lacks an interagency or national strategy to implement electronic delivery strategies, and needs to develop one to leverage its efforts and to assure that important issues, such as access and privacy, are addressed." The report was requested by Senator John Glenn (D-Ohio), Chairman of the Senate Governmental Affairs Committee, and was prepared with the assistance of an advisory panel chaired by Donald A. Marchand, Dean of the School of Information Studies, Syracuse University. Fred B. Wood of OTA was Project Director.

Also from OTA: ***Protecting Privacy in Computerized Medical Information*** (GPO Stock No. 052-003-01345-2; 157 pp., $10), says patient confidentiality will be threatened by computerized gathering of health-care data for cost-containment purposes under universal health insurance. The report warns: "Existing models for data protection, which place responsibility for privacy on individual institutions, will no longer be workable for new systems of computer linkage and exchange of information across high-performance, interactive networks." Stating that "new approaches to data protection must track the flow of data itself," OTA recommends federal legislation to supersede the patchwork of state laws and regulations.

An appendix presents several model codes for protection of health-care information. Preparation of the report included workshops chaired by Holly Gwin, OTA General Counsel at the time, and David Flaherty, Professor of History and Law, University of Western Ontario. Paula J. Breuning was the OTA Project Director.

Preparing for an Uncertain Climate (63 pp., no charge), summary of a fullscale OTA report, due late in November, says that research data that could guide policy about climate change "is likely to remain unknown for another decade or two," but stresses that "uncertainty does not mean that the Nation cannot position itself better to cope with the broad range of impacts possible under climate change or protect itself against potentially costly future outcomes." The report discusses various "adaptation strategies," including flexible systems of water conservation, contingency planning for hurricanes and other natural hazards, and less fragmentation among environmental agencies. The report notes that the US Global Change Research Program, budgeted for $1.4 billion, is focused on "understanding the causes for and rates of climate change," and will "not provide the practical technologies that might make us more prepared for climate change or the ecological information that would be helpful in providing policy guidance and adaptation options for natural systems." Several Congressional committees requested the report. The advisory panel for the study was chaired by Helen M. Ingram, Udall Studies in Public Policy, University of Arizona. Rosina Bierbaum of OTA was the Project Director.

Biopolymers: Making Materials Nature's Way (GPO Stock No. 052-003-01352-5; 80 pp., $5.50), foresees a bright future for polymers derived from natural sources, in contrast to synthetic polymers, which have raised concerns about toxicity and disposability. But, says OTA, "Advances in polymer technology have been driven principally by industry and academia, with Federal programs being relatively limited in scope. At present," the report adds, "Japan and the European Community are sponsoring major programs in biopolymer science and engineering." Noting that "important applications are beginning to emerge in the areas of food packaging, food production, and biomedicine," OTA calls for more collaboration among government, industrial, and academic researchers and "greater coherence" in the R&D efforts of federal agencies. The report lists biopolymer research programs in Europe and Japan and in US government agencies. The Senate Committee on Energy and Natural Resources requested the report. Matthew Weinberg of OTA served as Project Director.

Order from: New Orders, Superintendent of Documents, PO Box 371954, Pittsburgh, Pa. 15250-7954; tel. 202/783-3238; fax 202/512-2250; add 25 percent for foreign orders.

An Assessment of the NIH Women's Health Initiative (148pp., $25, plus $4 for shipping), from the Institute of Medicine (IOM), low marks for the design of the biggest, longest, and costliest clinical trials ever planned, an NIH extravaganza involving 160,000 women, to be studied over 14 years at an estimated cost of $650 million. NIH's neglect of women in clinical trials had already become a political embarrassment when Bernadine Healy arrived as NIH Director in 1991 and made women's health research a crowd-pleasing top priority on her agenda. The result was the hastily assembled, loudly touted Women's Health Initiative, which generated so much grousing in the biomedical-research community that the House Appropriations Committee commissioned a review by the IOM, health-policy arm of the National Academy of Sciences.

The review, conducted by a committee chaired by Marion J. Finkel, of Sandoz Pharmaceuticals, clearly reveals distress over the quality of planning for the trials and the accuracy of

(Continued on Page 7)